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ANALYSIS OF FACTORS THAT HAVE INFLUENCED  
OUTCOMES OF BATTLES AND WARS:  
A DATA BASE OF BATTLES AND ENGAGEMENTS  
VOLUME I- MAIN REPORT

SEPTEMBER 1984



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PREPARED BY  
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DUNN LORING, VIRGINIA  
(UNDER CONTRACT MDA 803-82-C-0383)

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CAA-SR-84-6

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) A comprehensive analysis in six volumes of the factors that have significantly influenced the outcomes of 600 major battles of modern history, commencing with the Netherlands' War of Independence and the Thirty Years' War, and continuing through the 1973 Arab-Israeli War. Volume I includes the summary and introductory materials. Volumes II-VI present matrices and narrative summaries for the engagements, which are grouped chronologically by wars and campaigns		

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factors affecting outcome in historical engagements, surprise in warfare, combat forms and resolution in historical engagements, advance rates and frontages in historical engagements.

20.

within wars. The matrices summarize all important elements of data and qualitative information concerning each engagement, plus a historical assessment of the factors that were important to the course of the engagement and its outcome. Following each group of matrices are narrative summaries of engagements listed in the matrices. These narrative summaries succinctly describe the background, course, and outcome of each engagement, include a brief assessment of its significance, and list the sources consulted with respect to the presentation for each. Appended to each volume are bibliographies listing the major sources consulted during the research for each.

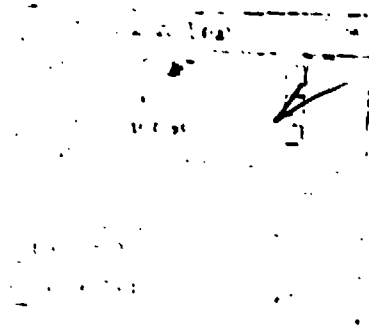
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STUDY REPORT  
CAA-SR-84-6

MILITARY HISTORY:  
A DATA BASE OF SELECTED BATTLES  
1600 - 1973  
VOLUME I - MAIN REPORT

September 1984



B-3



Prepared by  
MANAGEMENT AND SUPPORT DIRECTORATE  
US Army Concepts Analysis Agency  
8120 Woodmont Avenue  
Bethesda, Maryland 20814-2797

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VOLUME IV - Wars of the 20th Century:  
1904 - 1940 ..... (published separately)

VOLUME V - Wars of the 20th Century: World  
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VOLUME VI - Wars of the 20th Century: World  
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on the Eastern Front, and of the War Against Japan.  
The 1967, 1968, and 1973 Arab-Israeli  
Wars ..... (published separately)





**ANALYSIS OF FACTORS THAT HAVE INFLUENCED  
OUTCOMES OF BATTLES AND WARS: A DATA  
BASE OF ENGAGEMENTS AND BATTLES**

**ONE SHEET  
STUDY GIST  
CAA-SR-84-6**

THE SCOPE OF THE EFFORT documented in this report was as follows:

- (1) Determine a set of descriptive factors which are judged to be useful for characterization of the nature and outcomes of military battles.
- (2) Identify a set of battles (600-plus battles over the past four centuries) for which a usefully large part of the descriptive factors above can be expected to be obtainable from results of earlier historical work.
- (3) Prepare, in effect, a matrix of data in which the matrix columns are the descriptive factors, the matrix rows are the battles, and the column/row intersection cells contain the specific data which pertain to the particular descriptive factor in the particular battle.

THE MAIN THESIS on which the work documented herein rests is that historical data concerning factors present in past combat situations can possibly provide the insights which would enhance the ability to more accurately portray hypothetical future battles in simulations.

THE SCOPE OF THE REPORT includes six volumes, five of which contain battle data, and a main report which discusses Concepts Analysis Agency's assessment of the data collection effort.

THE BASIC APPROACH followed in this study can be defined as: (1) sponsorship of a contract with Historical Evaluation and Research Organization, Dunn Loring, Virginia; (2) invited reviews of a random sample of battle data by four Department of the Army military historical research organizations; and (3) an overall assessment of the original research effort and the subsequent reviews.

REASONS FOR PERFORMING THE STUDY are mainly as follows: a critical feature of simulations used by CAA in addressing theater-level issues is the portrayal of decisions by their commanders and staffs under a variety of conditions. Insights concerning such conditions may be provided through consideration of the conditions existing in previous warfare. Additionally, there is among leaders within the Army analytical community a growing belief that an understanding of the "numbers" of history, when properly employed, could be helpful in predicting the future.

THE STUDY SPONSOR was the Director, US Army Concepts Analysis Agency, who also established the objectives and monitored the study activities.

THE STUDY EFFORT was directed by Ms Zelma M. Harms, Assistant Director for Management Support, and LTC Mike Deems, who was the Contracting Officer's Representative for the HERO contract.

COMMENTS AND QUESTIONS may be directed to US Army Concepts Analysis Agency, ATTN: Assistant Director for Management Support, 8120 Woodmont Avenue, Bethesda, Maryland 20814-2797.

Tear-out copies of this synopsis are at back cover.

**MILITARY HISTORY:  
A DATA BASE OF SELECTED BATTLES, 1600-1973**

**VOLUME I - MAIN REPORT**

**CHAPTER 1**

**INTRODUCTION**

**1-1. PURPOSE.** The US Army Concepts Analysis Agency (CAA) performs analyses which address theater-level issues concerning strategy, forces, materiel, and personnel. CAA employs theater-level computer simulations in the conduct of these analyses to develop war reserve requirements and force structures, to evaluate the effectiveness of forces and systems during warfighting, and to assess capabilities to mobilize and sustain operations during war. A critical feature of these simulations is the portrayal of decisions by commanders and their staffs under a variety of scenarios and conditions. It is believed that historical data concerning factors present in past combat situations could possibly provide the insights which would enhance the ability to more accurately portray hypothetical future battles in Agency simulations. Additionally, there is among leaders within the Army analytical community a growing belief that an understanding of the "numbers" of history, when properly employed, could be helpful in predicting the future. In order to take advantage of such a relationship, it has also been posited by these same leaders that there should be a greater interplay between professional historians and their official organizations within the Army and the analytical community. In an effort to obtain sets of "numbers" from historical research, the US Army Concepts Analysis Agency recently sponsored a contract with Historical Evaluation and Research Organization, Dunn Loring, Virginia, which had the following objectives:

a. Determine a set of descriptive factors which are judged to be useful for characterization of the nature and outcomes of military battles.

b. Identify a set of battles (600-plus battles over the past four centuries) for which a usefully large part of the descriptive factors above can be expected to be obtainable from results of earlier historical work.

c. Prepare, in effect, a matrix of data in which the matrix columns are the descriptive factors, the matrix rows are the battles, and the column/row intersection cells contain the specific data which pertain to the particular descriptive factor in the particular battle.

**1-2. SCOPE.** The data resulting from the HERO contract is contained in Volumes II through VI. A summary and introductory materials prepared by the contractor is contained in the preliminary section of Volume II. This volume presents results of CAA's assessment of the HERO data effort.

## CHAPTER 2

### DATA ASSESSMENT

#### 2-1. METHODOLOGY

a. **Agency Reviews.** Since CAA has only limited historical research expertise resident on its staff, four Army historical organizations were requested to assist in review of selected data. A random sample of eight battles was selected from the final report. These eight battles were then distributed as shown in Table 2-1 to the Army historical agencies for their review and comment. Several of the battles were provided to two different agencies in an effort to obtain a comparison of responses on the same data. The four agencies selected for quality assurance actions were as follows:

- (1) US Army Military History Institute, Carlisle Barracks, Pennsylvania.
- (2) US Army Center of Military History, Washington, DC.
- (3) US Military Academy, Department of History, West Point, New York.
- (4) US Army Combat Studies Institute, Fort Leavenworth, Kansas.

Table 2-1. Quality Assurance Agencies and Battles

Agency 1	Agency 2	Agency 3	Agency 4
San Juan (Sp-Am)	Essen Hook (WW II)	Brandy Station (Civil)	Brandy Station (Civil)
Cambrai II (WW I)	Cambrai II (WW I)	Kuneitra (Israeli 73)	El Guettar (WW II)
Itri-Fondi (WW II)	Jebel Geneifa (Israeli 73)	Itri-Fondi (WW II)	Jebel Geneifa (Israeli 73)

2-2. **RESULTS.** Relevant comments received from review agencies are contained in Appendix B. Also included are responses provided by HERO to selected comments. Since CAA did not inform reviewers that the final report would contain quality assurance remarks, no associations of specific battles with specific agencies are made. Although HERO maintains that failure to identify reviewers reflects an "unscholarly" approach to reporting of historical research, CAA believes the first priority to be the credibility of agency positions and that presence or lack of scholarship is based on content rather than identification of critics. Therefore, the

anonymity of reviewers has been maintained. In assessing the results of the reviews, certain comments and classes of responses were deleted--this was required for two reasons.

a. In requesting the review of the HERO material, CAA had intended that reviewers comment only on whether or not data included by HERO were correct, incorrect, or could not be verified. Therefore, comments having to do with the sources from which data were obtained and whether or not the effort itself was useful were not included in the report. Although comments concerning sources were deleted, CAA recognizes that the issue of quality of sources is, as one reviewer stated, in separate correspondence, "a fundamental tenet of historical inquiry and criticism." The decision not to enter into discussion of this issue in this report should not be interpreted to indicate that CAA accepts without question the quality of sources used either by HERO in the original effort, cited by them in rebuttals, or referred to in the critiques of the HERO work. The decision to not enter such a discussion at this point was partly based on HERO's highlighting of a potential misperception by reviewers of the terms of reference provided to the contractor at the initial Study Advisory Group (SAG) meeting and of HERO's interpretation of those terms of reference. In essence, HERO interpreted (and CAA did not reinterpret) their guidance to be as follows:

"(1) HERO was to take advantage of the results of past historical research.

"(2) If, because of gaps in available sources, or limitations in time available to seek other sources, desired information was not available, entries should be left blank rather than filled in by guesswork.

"(3) Because of HERO's reputation for, and experience in, the analysis of military history, the assessments of HERO senior historians on the factors influencing the outcomes of battles were desired, even when issues were controversial."

b. In addition to deletion of comments having to do with sources, comments which stated "could not be checked" or "could not confirm" were also deleted unless some explanatory note was included. This was necessary since the instructions which CAA provided to the reviewers did not clearly define what lack of confirmation would indicate (i.e., lack of confirmation could mean the reviewer could not find confirming data or it could have meant that the data which was found did not confirm that presented by HERO). Finally, as a space-saving device, CAA deleted comments when it was indicated that reviewers believed that the HERO data was correct.

## 2-3. SUMMARY

a. The intention to compare reviewers' responses was not fully successful since very little commonality occurred in the selection of data upon which to comment.

b. The comments received from reviewers highlighted two basic challenges to an effort of this nature.

(1) First, the comments emphasized the challenge inherent to sorting out of varying interpretations which different historians offer in their recounting of events. For example, in describing the Revolutionary War Battle of Bemis, HERO's source described the battle as "the first major victory for the Americans..." At least one of the reviewers took exception to this and to various other descriptions of battle events. All reviewers listed additional sources which they believed offered better data or descriptions. Since the choice of sources was not a matter which CAA had requested comment on, most of the source-oriented comments are deleted from this report. However, the issue does emphasize the difficulty which a data compiler always faces--i.e., choice of interpretations when different sources offer extremely different accounts.

(2) A second class of comments which highlighted a difficulty was the sense that the data presented implied greater precision than is reflected in historical accounts. This was especially noted in data having to do with casualties, an area recognized as being fraught with inconsistencies and vagueness in historical and operational reporting.

c. Timing of the publication of this summary, assessment of the HERO data, and HERO's response impacted in part on the extent of reviews. That is, both HERO and the reviewers indicated that if time and resources had been unlimited, a more thorough product could have been provided. CAA acknowledges this aspect of the report but believes it to be important that the results be made available now rather than to continue refinement efforts.

d. In summary, the review of the HERO reports and the subsequent random assessments resulted in a conclusion that the report and the assessments will provide a valuable starting point for organizations desiring to investigate the relationship between history, its "numbers," and analysis or prediction of battle intricacies. However, as HERO points out in their own introduction (VOL II), the work needs rigorous review, some gaps require filling, and other time periods and battle coverage would help in providing a more comprehensive work.

**APPENDIX A**  
**STUDY CONTRIBUTORS**

**1. STUDY TEAM. Management and Support Directorate.**

Report Author: Zelma M. Harms

Contract COTR: LTC J. M. Deems

**2. EXTERNAL CONTRIBUTORS**

a. **Data Collection.** Data were collected by the Historical Evaluation and Research Organization (HERO), a division of T. N. Dupuy Associates, Inc. The following personnel from HERO authored the HERO Report:

Trevor N. Dupuy

Grace P. Hayns

C. Curtiss Johnson

Charles R. Smith

Brian Bader

Edward Oppenheimer

Arnold Dupuy

b. **Quality Assurance.** Quality assurance remarks were provided by personnel from the following agencies:

US Army Military History Institute  
Carlisle Barracks, Pennsylvania 17013  
Director: COL D. P. Shaw

US Army Combat Studies Institute  
Fort Leavenworth, Kansas 66027  
Director: COL W. A. Stofft

US Army Center of Military History  
Washington, D. C. 20314  
Chief of Military History: BG D. Kinnard, USA, Ret.

US Military Academy  
West Point, New York 10996  
Professor and Head of the History Department: COL R. K. Flint

## APPENDIX B

COMMENTS MADE BY REVIEWERS  
ON SELECTED BATTLES

## FOREWORD

To obtain an independent assessment of the quality of the data collected under Contract MDA903-82-C-0363 (presented in Volumes II through VI), a review of eight selected battles was conducted. The purpose of this appendix is to present a synopsis of relevant comments made by reviewers of the HERO report. The reader should refer to the basic HERO report for descriptions of each of the battles and complete HERO-prepared data on each.

Reports from the assessment agencies are presented without attribution in Annexes I to XV to this appendix. HERO's comments on the reviewer reports have been inserted (with highlighted lettering) into the appropriate location in the reviewer's reports.



ANNEX

CONTENTS

I	Specific Comments, Brandy Station, Agency 1
II	Specific Comments, Brandy Station, Agency 2
III	Specific Comments, Cambrai II, Agency 1
IV	Specific Comments, Cambrai II, Agency 2
V	Specific Comments, Essen Hook
VI	Specific Comments, El Guettar
VII	Specific Comments, Itri-Fondi, Agency 1
VIII	Specific Comments, Itri-Fondi, Agency 2
IX	Specific Comments, Jebel Geneifa, Agency 1
X	Specific Comments, Jebel Geneifa, Agency 2
XI	Specific Comments, Kuneitra
XII	Specific Comments, San Juan/El Caney
XIII	Specific Comments, Bemis Heights, American Revolution
XIV	General Comments, Russo-Japanese War
XV	General Comments, Manchurian and Jitra Line Battles

## APPENDIX B - ANNEX I

BRANDY STATION, CIVIL WAR  
9 June 1863  
(Reviewer: Agency 1)

Category	Comments
Ref: Table 3. Strengths and Combat Outcomes	
Strength total:	
attacker, 12,000	10,981
defender, 10,000	10,292
Cavalry	
attacker, ?	7,981
defender, ?	10,292
Artillery pieces	
attacker, ?	30
defender, ?	24
Battle casualties	
Total	
attacker, 900	866
defender, 1,500	523
Percent per day:	
attacker, 7.5	7.9
defender, 5.0	.
	Correct
Artillery pieces lost	
Total	
attacker, ?	3
defender, ?	0
Percent per day	
attacker, ?	10
defender, ?	0
Success	
attacker, x	.
	Incorrect

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Ref: Table 4. Intangible Factors

Leadership:

C

Incorrect. Attacker disadvantage.

HERO. HERO stated that leadership was comparable on both sides. In fact there is substantial evidence that in this battle Pleasonton's leadership was better than Stuart's.

Ref: Table 5. Outcome

Victor:

attacker, x

Incorrect. Defender.

HERO. This is the same observation as that under "Success." In other words the commentator is giving us two incorrect statements for the same comment.

Mission

accomplishment:

attacker, 6

4

defender, 5

9

HERO. The refusal to accept HERO's assessment, but the unwillingness to assert that it is incorrect, is interesting. The HERO mission accomplishment assessment is based upon rigorous application of an assessment methodology . . . . The evaluation of 9, incidentally, is normally reserved for a Lee at Chancellorsville, or a Napoleon at Austerlitz. To suggest that Stuart deserved a 9 at Brandy Station would have amazed Douglas Southall Freeman.

Ref: Table 6. Factors Affecting Outcome Force Quality

Leadership:

attacker, N

Incorrect. Attacker disadvantage.

HERO. Comments as for Leadership in Table 4, above.

Planning:

attacker, x

Not a factor.

HERO. Planning was a tremendous factor for the Union side, and had much to do with the Union success. Pleasonton was operating in accordance with his own and Hooker's plans.

Surprise:

attacker, x

Not a factor.

B-I-2

HERO. The fact that the Union force achieved complete surprise over the Confederates was the most significant feature of the battle.

**Ref: Table 7. Combat Forms and Resolution of Combat**

### Success:

**attacker, x**

**Incorrect.**

**Resolution:**

attacker, P, WD

**Incorrect. Repulse, withdrew.**

HERO. HERO states that the attacker penetrated and then withdrew. The commentator refuses to accept the fact that Pleasonton, making a reconnaissance in force, accomplished his mission, then withdrew.

### Evaluation of Overall Data Quality

Serious problems exist within Sections 3, 5, 6, and 7. Section 3 is woefully deficient in hard data, and is inaccurate in much of the data provided. The missing items could have been supplied with relative ease, but not by consulting the limited sources listed in the HERO bibliography. Sections 5, 6, and 7 can be faulted for declaring the attacking force to be the victor. The attacker lost more heavily in both men and guns than did the defender; the attacker left the field in the hands of the defender, and, most important of all, the attacker failed to achieve either his primary or secondary objectives. If better sources had been consulted, a different view of this battle would have emerged.

HERO. The assertion that the HERO data is inaccurate is not correct. The sources are so contradictory that many numbers could be used, and those suggested by the commentator are no better than HERO's. It is interesting that, despite the assertion, the commentator refrained from making an "inaccurate" assessment for any of this data.

The statement about deficiency in hard data, and that the missing items could have been supplied with ease, is simply not correct. Again we are faced with contradictions in the sources.

The reasons offered for the success of the defender simply will not stand up. The defender was badly surprised, and despite the advantages inherent in defense, was barely able to hold his own. The attacker, on a reconnaissance in force, accomplished his mission and withdrew. Not unimportant as an element of Pleasanton's decision to withdraw was the discovery of large bodies of Confederate infantry in the vicinity. His report provided Hooker with the first solid information about the northward movement of Lee's army. Pleasanton also captured papers enabling him to

report that the bulk of Lee's army was near Culpeper. Confederate losses in killed and wounded were slightly greater than those of the Union. The circumstances of the battle were such that the defender, holding the ground, was bound to take more prisoners, and more guns, than the attacker.

Additional Sources Consulted by Reviewer

Coddington, Edwin S., The Gettysburg Campaign: A Study in Command, New York, 1968.

Downey, Fairfax, Clash of Cavalry: The Battle of Brandy Station, June 9, 1863, New York, 1959.

Freeman, Douglas Southall, Lee's Lieutenants: A Study in Command, Vol. III, New York, 1944.

McClellan, H. S., The Life and Campaigns of Major-General J. E. B. Stuart, Boston, 1885.

Starr, Stephen Z., The Union Cavalry in the Civil War, Vol. I, Baton Rouge, LA, 1979.

War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies, Vols. XXV and XXVII, Washington, D. C., 1889.

Wise, Jennings C., The Long Arm of Lee, Vol. II, Lynchburg, VA, 1915.

HERO. HERO has consulted two of the additional sources which this commentator says he consulted, plus several others. Both Freeman's Lee's Lieutenants and the pertinent records in The Official Records fully confirm the HERO assessment. Other sources consulted were: Livermore, Numbers and Losses in the Civil War; K. F. Williams, Lincoln Finds a General (Vol. II); Bruce Catton, Glory Road; Wood and Edmonds, The Civil War in the United States; Ropes and Livermore, The Story of the Civil War; and Steele's American Campaigns.

**General HERO Observations:**

Although quite critical in tone and in the presentation of remarks, this critic was careful not to attribute to HERO errors in several cases where the sources are contradictory. Two of the assessed errors are contradicted by the even more critical report by Agency 3. Thus in only four of HERO's entries do the two agencies agree that the entry is incorrect (actually, since there is duplication in two of these, the agreement is on three HERO errors). In all other cases of error assessed by either Agency, HERO and the other agency are either agreed on HERO's entry, or at least do not disagree.

It is also interesting that when HERO checked the two most important of the sources which this commentator cited as a basis for asserting HERO errors, it was found that both sources agreed with HERO with respect to the disputed entries, and with HERO's overall version of the battle.

## APPENDIX B - ANNEX II

BRANDY STATION, CIVIL WAR  
9 June 1863  
(Reviewer: Agency 2)

## CATEGORY

## COMMENTS

Ref: Table 1. Identification

Width of front (km): 8.0	Substantially correct.	This frontage figure is correct for the main battle area around Fleetwood Hill. However, it completely ignores the massive Union flanking movement via Kelly's Ford, and the important small actions fought south of Brandy Station. This area of conflict and maneuver is imperative to the understanding of the Battle of Brandy Station.
--------------------------------	---------------------------	---

Ref: Table 3. Strengths and Combat Outcomes

Strength total: attacker, 12,000 defender, 10,000	Substantially in error.	On page 293 of H. B. McClellan's <u>I Rode with Jeb Stuart</u> he states US strength at 10,981, and CS strength at 9,536.
---	----------------------------	---

HERO. It is interesting to see how these figures differ from those of the Agency 1 commentator.

Strength/cavalry: attacker, ? defender, ?	Substantially in error.	See above comment.
---	----------------------------	--------------------

HERO. This is simply repeating the same error assessment twice.

Battle casualties (total): attacker, 900 defender, 500	Substantially in error.	Same references as above with addition of page 292. He gives US losses at 936, and CS losses at 523.
--	----------------------------	--

HERO. It is interesting, and instructive to compare these assertions with those of the Agency 1 commentator.

Battle casualties (percentage):	Substantially in error.	US losses should be 8.5 percent.
attacker, 7.5		
defender, 5.0		

HERO. HERO, on the basis of its casualty assessment, calculated a percentage. This commentator, using different figures, gets a different result, and says HERO is wrong.

Artillery pieces lost, total:	Substantially in error.	McClellan states that three US artillery pieces remained in CS possession after the battle.
attacker, ?		
defender, ?		

HERO. Because of insufficient data in the sources consulted, HERO did not enter a figure, but said the losses were questionable. It is not clear how this can be assessed as an error.

Advance (km/day):	Substantially correct.	As noted in Table 1, this advance is concerned only with the action at Fleetwood Hill. It totally ignores the substantial US advance via Kelly's Ford to Brandy Station.
1.5		

Ref: Table 4. Intangible Factors

Leadership:	Substantially in error.	Though great bravery was shown by officers on both sides the tactical fighting, maneuvering, and reinforcing done by the CS forces was far superior to the US forces (via Mr. William Price, Dept. of State. Mr. Price is a member of the DCCMPT and is preparing the definitive history of the battle of Brandy Station.)
C		

HERO. This superiority in CS leadership is not evident in any of the sources.



Logistics: N	Substantially in error.	Confederate artillery retired from skirmishing at Rappahannock River due to lack of suitable ammunition played the critical role at Fleetwood Hill. See <u>I Rode With Jeb Stuart</u> by MAJ H. B. McClellan.
Momentum: N	Substantially in error.	Momentum was originally with the US attack. However, local CS counter-attacks--especially that of GEN W. E. Jones--gave tactical/strategic momentum to the CS forces from time to time thus nullifying the initial US surprise momentum.

HERO. What is "tactical/strategic momentum" in a battle between two cavalry corps? In essence, this comment says HERO is right, except from "time to time."

Ref: Table 5. Outcome

Victor: attacker, x	Substantially in error.	GEN Pleasanton totally lied in his official report concerning the Battle of Brandy Station. He was tactically defeated by GEN Stuart on the field and was driven from it. It is true that the confidence derived by the US Cavalry in this battle enabled them to meet and defeat the CS Cavalry at Gettysburg.
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HERO. GEN Pleasanton totally lied? What is the proof? How does this stand up when Douglas Southall Freeman asserts that Stuart lied in his report? The sources will support a statement that Pleasanton fought a drawn battle, and withdrew because he had accomplished his mission.

Distance ad- vanced (km/day): attacker, 1.5	Substantially in error.	This figure is correct only so far as the US route from Beverly Ford to the main battlefield at Fleetwood Hill is concerned. Once again the US flank movement via Kelly's Ford is ignored.
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HERO. The commentator appears to be saying that we are "substantially" correct, but overlooked the further advance of one element of the US force. But if so, how can he at the same time say we are "substantially in error?" Certainly the advance should be that of the main body to its point of furthest advance.

Mission accomplished: attacker, 6 defender, 5	Substantially in error.	According to Mr. Price, GEN Pleasanton lied in his official report. GEN Hooker in his official communications showed that Brandy Station did not give him the information he sought concerning Lee's Army. What GEN Pleasanton accomplished was an initial tactical surprise and the confidence building in the US Cavalry.
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HERO. General Hooker would not have been satisfied with any information short of a situation report directly to him from General Lee. In fact Hooker learned everything he needed about the movement of Lee's army, and as much as he could possibly have expected from Pleasanton's reconnaissance in force.

Ref: Table 6. Factors Affecting Outcome

Force quality: N	Substantially in error.	A critically important factor on both sides.
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HERO. The commentator's remark . . . tends to support the HERO assertion that this factor did not influence the outcome of the battle.

Reserves: N	Substantially in error.	Ability of CS to bring into play dispersed units was critical to their survival after the initial US surprise.
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HERO. This topic had to do with the employment of reserves by the commander. It has nothing to do with the ability of the CS commander, or his subordinates, to recover from surprise.

Mobility superiority: N	Substantially in error.	A critically important factor on both sides.
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HERO. Again the critic's remark proves the validity of the entry in the HERO report . . .

Terrain, roads: N	Substantially in error.	Various ridges and hills played a critical role in the combat. Whoever held the area known as Fleetwood Hill dominated the plain at Brandy Station. The road network was critical for the movement of both US and CS forces. Because of the basic nature of terrain around Brandy Station the road network predetermined the route of cavalry advance and retreat for large bodies of troops.
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HERO. The critic makes clear that terrain was important in this battle, as in any battle. In no way does he contradict HERO's evaluation that there was no aspect of the terrain that especially influenced the outcome.

Leadership: N	Substantially in error.	The decisive factor in enabling the CS forces to react to the US surprise. Both sides should be noted for the courage displayed by their junior officers. CS tactical leadership was superb and enabled them to counter-attack after being surprised.
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HERO. This is virtually a repetition of the prior rejection of HERO's assessment that leadership was comparable on both sides, even though his remark tends to confirm the HERO assessment.

Maneuver, mass, narrow front: N	Substantially in error.	Critically important; CS maneuvering of dispersed troops enabled them to stave off defeat many times during the battle. US maneuvering did not take full advantage of their crossing at Kelly's Ford. Narrow front fighting was caused by the condition of various roads, and gave the CS forces the ability to contain a surprise attack on limited, narrow fronts. Mass cavalry charges took place at Fleetwood Hill throughout the battle.
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Logistics: N	Substantially in error.	Check notation under Table 4, Logistics.
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CAMBRAI II, WORLD WAR I  
30 November-3 December 1917  
(Reviewer: Agency 1)

## SPECIFIC COMMENTS

I have examined the section on the battle of Cambrai II in the HERO document and find it less than satisfying.

1. The figures of those engaged are not consistent with official British and German figures.

HERO. HERO's figures are based upon official British figures: Statistics of the Military Effort of the British Empire During the Great War, London, HMSO, 1922. That volume includes some German statistics. HERO believes that practically all official German records pertaining to World War I were destroyed in World War II.

a. It would have been helpful if the commentator had cited his sources.

b. It would have been helpful if he had given what he considered to be the correct figures.

2. Although the document indicates technology was significant in Cambrai I, it does not indicate that improved C3 played a role on the German side in Cambrai II in addition to improved assault methods and use of AT Arty.

HERO. It is not clear what the commentator means by "improved C3." Improved with respect to what? How did it play a role? What is the source?

a. The HERO narrative and commentary show what is apparently meant by "improved assault methods."

b. There was no AT artillery in existence yet.

3. The weather reports, although possibly correct, do not take into account the condition of the ground after a week's fighting (i.e., the impact of previous bad weather).

HERO. The commentator says "though possibly correct." Doesn't he know? If not, how can he possibly criticize any other account? How was the condition of the ground relevant? The commentator does not indicate. How was this situation different from any other protracted World War I battle?

## APPENDIX B - ANNEX IV

CAMBRAI II, WORLD WAR I  
30 November-3 December 1917  
(Reviewer: Agency 2)

## CATEGORY

## COMMENTS

Ref: Table 3. Strengths and Combat Outcomes

Battle casualties total:	Substantially incorrect.	Several general reference works place casualty figures at approximately 45,000 for both the Germans and the British.
attacker, 28,000		
defender, 29,000		

HERO. We know of only one general reference source that gives reasonably accurate figures for the two battles of Cambrai. (We looked at about 10 such sources.) That is World War I, A Compact History, by Grace P. Hayes, who also happens to be one of the HERO study team. She says (p. 230) that, for both Cambrai I and Cambrai II, the casualties were about 45,000 for each side. That book was published in 1972. In a careful review of what is believed to be the best available source for such figures, Statistics of the Military Effort of the British Empire during the Great War, London, HMSO, 1922, the casualties were recalculated at 44,000 British, 53,000 German. (The assessment of German casualties may be slightly high.) For Cambrai II these were estimated at 28,000 German, 29,000 British, on the basis of the accounts and data from the sources cited in the report.

Ref: Table 6. Factors Affecting Outcome

Force quality: attacker, x	Could not be checked.	These are value judgments. From the general sources reviewed, the major British weakness may have been in the leadership of the upper echelons of command and not in the quality of their fighting troops.
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HERO. HERO states in its report that German force quality was an element in the German success. Detailed studies of primary sources for another study relating to the effect of the employment of tanks at Cambrai makes it very clear that this was a major factor. HERO did not distinguish in this regard between "fighting troops" and "upper echelons of command." There seems to be no doubt, however, that the German superiority was present across the board. HERO has extensively studied the question of troop quality and force quality of the German Army in World Wars I and II, and has reported extensively on this. HERO does not subscribe to the idea that

the British top leadership consisted of a bunch of "donkeys." The British leadership was uninspired but professional, and marginally (but clearly) inferior to that of the Germans.

Leadership:	Could not be	See note for Force Quality above.
N	checked.	

#### General Comments on the Data Presented

Based upon a survey of the general reference works and monographs, the preponderance of the material appears to be accurate. Due to lack of access to primary source materials it is not possible to verify the specific figures cited for artillery pieces, casualties, etc. This inability to replicate the data was compounded by the fact that the study itself failed to provide any information for several of the categories. On the whole, however, the data appears to be substantially correct.

## APPENDIX B - ANNEX V

ESSEN HGJK, WORLD WAR I  
3 October 1918

## CATEGORY

## COMMENTS

Ref: Table 1. Identification

## Forces

attacker:

US 1/5th

Mar Regt (-)

Substantially  
incorrect.

The designation 1st Bn, 5th Marines (-) is inaccurate. The attack was made by one company, 17th Company. One company does not equate to a battalion minus. This mistake may have contributed to the discrepancies in the personnel totals (see Table 3 comments). Even the cover narrative for this action indicates that the attack was made by one company, therefore creating an internal contradiction within the report.

## Commanders:

attacker, COL Hunt

Rank incorrect; name correct. Hunt was the commander of 17th Company, and therefore, it is highly unlikely that he would have held the rank of colonel.

defender, MAJ  
Webendoerfer

Substantially  
incorrect.

Major Webendoerfer was the battalion commander of the Cologne Landsturm Battalion. His four companies were distributed one per division across the XII German Corps front. He was not located with his 2nd Company which was on the far right flank. Instead, CPT Kranz commanded 2nd Company in this engagement.

## Ref: Table 2. Operational and Environmental Variables

Surprise: Y	Substantially correct.	This is a questionable call. There was a general Allied attack along the entire XII German Corps front. The enemy in the Essen Hook were aware of the movements along their left flank. The actual timing of the attack into the rear of the position may have been a surprise, but it is doubtful that the surprise was as decisive as is indicated in the report.
Level of surprise: substantial	Substantially correct.	Questionable. See comment on Surprise above.
Air super- iority: attacker, x	Substantially correct.	The Allies did maintain air superiority in this sector, but there is no indication in the records reviewed that air support was used or that it was a factor in the outcome of the battle.

## Ref: Table 3. Strengths and Combat Outcomes

Strength, personnel totals: attacker, 1,420	Substantially incorrect.	This figure represents the strength of one battalion; however, a single company made the attack. The number should be closer to 700.
defender, 216	Substantially incorrect.	A XII German Corps strength report from the evening of 2 October 1918 shows 2nd Company, 2nd Cologne Landsturm Battalion with a total strength of 56 men. They may have received replacements overnight, but by this stage of the war, it is highly unlikely that a single company would have received 150 personnel.



## APPENDIX B - ANNEX VI

EL GUETTAR, 23 March 1943

## CATEGORY

## COMMENTS

Ref: Table 1. Identification

Date  
23 March  
1943

Substantially  
correct.

The action around El Guettar lasted from 16 March until 8 April 1943. It consisted of four distinct phases: the successful attack of the 1st Infantry Division against the Italian Centauro Division, 16-22 March; the unsuccessful counterattack by the 10th Panzer Division on the 1st Infantry Division, 23 March; the unsuccessful attacks by the 1st and 9th Infantry Divisions on the 10th Panzer and Centauro Divisions, 24 March-5 April; and the successful withdrawal of the two Axis divisions, 6-8 April. HERO considers only the action of 23 March.

Forces:  
Attacker,  
German 10th  
PZ Div (+)  
Defender,  
US 1st Inf  
Div (+)

Substantially in  
error.

George F. Howe (Northwest Africa: Seizing the Initiative in the West, Q. C in the bibliography) indicates that the 10th Panzer attacked at El Guettar without some of its organic units. I can find no reference to Italian units participating in the first attack at El Guettar. Only elements of the 10th Panzer participated in the second attack. To put a (+) after the 10th Panzer is thus an error; it should be a (-).

HERO: The reviewer finds HERO "substantially in error" in designating the German 10th Panzer Division, reinforced, as the attacker. In fact, the US II Corps Report of Operations, 15 March-10 April 1943, states (p. 5) that on 23 March "1st Infantry Division counter-attacked by German 10th Panzer Division and elements Centauro Division." Yet, the reviewer can find "no reference to Italian units participating."

Duration: See Comment 1  
1 Day above

Width of front, km: Substantially  
Attacker, 250 in error.

The Centauro Division occupied an 86-kilometer front due to the penetration of the US 1st Armored Division on the right flank of the Italians. The 10th Panzer Division was concentrated on the front of approximately 5 kilometers.

HERO: The reviewer finds HERO "substantially in error" in giving 25 kilometers as the attacker's front. He states that the Centauro Division (which he earlier denied was part of the attacking force--see above) "occupied an 86-kilometer front due to the penetration of the US 1st Armored Division on the right flank of the Italians." In fact, as reference to Map XI in Howe's Northwest Africa (a book the reviewer apparently utilized extensively) shows, Centauro occupied a front of approximately 37 kilometers; this may be further confirmed by reference to the maps in the Italian official history (a volume also used by the reviewer).

The Axis defensive line northeast of Centauro's sector was the responsibility of the Italian 50th Special Brigade (or Imperiali Brigade), reinforced on 22 March by the 10th Panzer Division's Kampfgruppe Lange and various battalion-sized or smaller units of infantry, armor, and artillery, released by Army Group Africa from Army Group reserve for the defense of Mezzouna Pass against the thrust of the US 1st Armored Division.

The bulk of the Centauro Division was concentrated along a 25-kilometer front from Djebel Berda in the south (left flank of the division) to Bou Hamran and the Djebel Orbata massif in the north (effectively the division's right flank, since the line to the northeast along the Djebel Orbata massif to the boundary of the division with the 50th Special Brigade could be held by small detachments because of the nature of the terrain). This is the attacker's front given by HERO. The rationale, of course, is that the engagement area is precisely defined and delimited by the terrain. Centauro's left flank and effective right flank rested on impassable terrain obstacles.

HERO accepts the reviewer's comment that the 10th Panzer Division attacked on a front of approximately 5 kilometers but again points out that the Centauro Division was a part of the attacking force (and this could be true even if--as was not the case--the Italian division merely supported the attack by fire). To posit 5 kilometers as the attacker's frontage at El Guettar would be rather like saying that the attacker's front on the third day at Gettysburg was the front of Pickett's, Pettigrew's, and Trimble's divisions.

## Ref: Table 3. Strengths and Combat Outcomes

Strength, personnel Total	Could not con- firm.	Generally the secondary sources cited by HERO do not contain the types of figures contained in this table.
Attacker, 10,300		

HERO: The reviewer "could not confirm," but states that the "secondary sources cited by HERO do not contain the types of figures (sic) contained in this table." HERO gives one figure, 10,300, not several, as implied by the reviewer. This figure, a close estimate, was developed from data in primary and secondary sources. An important source was tabular data in the Italian official history, particularly the table on pp. 354-55, "Forza effettiva Unita della la Armata alla data dell' 8 marzo 1943-XXI." Allowances were made for attachments, detachments, and casualties incurred by the Axis divisions during 8-23 March.

Strength, personnel Total	Could not con- firm.	Although I could not confirm the figure given by HERO, I have substan- tial reservations about it. Again none of the sources give the 1st Infantry Division's strength as of 23 March 1943. Howe in his Appendix A (Table 8, p. 680) gives a divisional strength for the 1st Division of 16,214 on February 1943, and 17,080 on 31 March 1943. The only attachments which Howe notes are a ranger bat- talion and two tank destroyer bat- talions. In addition, the divisional history ( <u>Combat Operations of the First Infantry Division During World War II</u> , N. P., N. D.) prepared under General Allen's direction indicates that the 17th Field Artillery Bat- talion reinforced the divisional fires. The TOE strengths for these units were 898 for each tank destroyer battalion, and approximately 516 for the ranger battalion (the earliest ranger battalion TOE that I could locate was 1944). I was unable to find a TOE for a World War II field artillery battalion, but postwar tables would allow an estimate of 650 officers and men. Taking the highest divisional strength and adding it to the TOE strengths would give a total of 20,032 at El Guettar compared to the 22,019 HERO lists. But there are
Defender, 22,019		

some further difficulties which require a reduction of the 20,032 figure:

a. One tank battalion and the 17th Field Artillery Battalion arrived at El Guettar at 1200 on 23 March as reinforcements from II Corps. They did not participate in beating off the first German attack. HERO defines personnel strength as "the sum, at the start of an engagement, of all personnel subject to enemy fire". These reinforcements should not be included in the American totals.

b. Even if HERO decides to ignore its own definition, the 889th Tank Destroyer Battalion relieved the 601st Tank Destroyer Battalion. At no time during the day did the Americans engage more than one tank destroyer battalion at a time.

c. Only two of the 1st Division's regiments, the 16th and the 18th Infantry, came under German attack. The 3d regiment, the 26th Infantry continued to confront elements of the Centauro Division, along the "Gumtree" road. The 26th Infantry should not be counted as part of the American total.

Other units than those listed in Howe could have been attached to the 1st Infantry Division, but HERO should be queried as to the basis of this figure.

HERO: The reviewer "could not confirm," but expressed "substantial reservations" about HERO's figure of 22,019. HERO's figure is based upon a primary source, the II Corps Station List and Strength Report, Annex No. 1 to the II Corps' G-1 Periodic (weekly) Report, 0001 hours 21 March 1943. The 1st Division's strength was 16,244; the strength of attached units was 3,172. The strength of units supporting the division was 2,603. The reviewer, basing his observations and statements on Howe and General Allen's memoir alone, was unable to recreate the order of battle of the 1st Division and its attached and supporting units in this engagement . . .

HERO, (cont.) Since his only recourse was data in Howe, he gives two completely immaterial personnel strengths for the 1st Division--the division's strengths "on February 1943 (sic)" and on 31 March 1943. The only attachments he could identify were "a Ranger battalion and two tank destroyer battalions." From General Aller's memoir he was able to determine that a unit which did not exist in the US Army in World War II--the "17th Field Artillery Battalion"--reinforced the division's fires. On this thin basis he proceeds to formulate his estimate of the defender's strength in this engagement.

Based on TO&Es the reviewer estimates that each TD battalion was 898 men strong. In fact, the 60th TD Battalion was 740 men strong, and the 899th TD Battalion was 920 men strong. Using a 1944 Ranger battalion TO&E, he gives the 1st Ranger Battalion's strength as "approximately 516"; in fact, it was 544 men strong. He was "unable to find a TOE for a World War II field artillery battalion" (in itself an incredible statement), but since, apparently, just about any TO&E would do, he gives his made up artillery battalion a strength of 650 officers and men (based on "postwar tables"). He then takes the highest divisional strength he found in Howe (31 March 1943) and adds to it these peculiar TO&E figures to arrive at a total of 20,032, much below the HERO figure. But, he continues, even this low figure should be reduced.

Under his heading "a.," he states that the 17th Field Artillery Battalion and one tank battalion "arrived at El Guettar at 1200 on 23 March as reinforcements from II Corps," and that, therefore, these units should not be included in the defender's strength total. Here he invokes the HERO definition of total personnel strength as his rationale: "the sum, at the start of the engagement, of all personnel subject to enemy fire." But the reviewer does not and cannot--given his sources--know where these units came from.

It should be noted that these units were not "reinforcements from II Corps," as the reviewer states. They were, in fact, units attached to the 1st Division. HERO did not include the 2d Battalion, 1st Armored Regiment (the "tank battalion" of the reviewer) in its strength or weapons summaries, because this unit was well beyond the zone of enemy fire at the onset of the engagement. It was ordered into the region between Gafsa and El Guettar during 24 March.

Since the 1st Battalion, 17th Field Artillery Regiment (not the 17th Field Artillery Battalion of the reviewer) was in the zone of enemy fire at the beginning of the engagement, its strength and weapons were included in the HERO totals.

HERO (cont.) Under heading "b." the reviewer argues against including two tank destroyer battalions in the defender's total, since, as he puts it, "At no time during the day did the Americans engage more than one tank destroyer battalion at a time." Both TD battalions were in the enemy's zone of fire at the beginning of the action. The 899th TD Battalion (not 889th, as the reviewer states) was in the division's mobile reserve near Gafsa at the beginning of the engagement and was ordered forward at 0845. The 1st Division's overlays show that elements of both TD battalions were on the FEBA at the end of the engagement.

Under heading "c." the reviewer contends that the 26th Infantry Regiment should not be included in the defender's total, since it was not subject to attack by the German division. This argument is rejected for the reasons given under "Forces, Attacker" and "Width of Front, Attacker," above.

Armor total: defender, 75	Substantially in error.	The 1st Division had only 35 tank de- stroyers attached at the beginning of the action. See the "Strength person- nel total, defender line" discussion above.
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HERO: The reviewer finds HERO "substantially in error." He states that "The 1st Division had only 35 tank destroyers attached at the beginning of the action." Apparently, this is the reviewer's concept of the number of the defender's total armor; this reflects his belief that only one US TD battalion should be considered as being engaged at any given time. As described above, this argument is invalid.

The HERO armor total for the defender (75 tanks) is derived from adding the totals of the SPAT weapons of the two TD battalions--36 75mm guns (SP on M3 half-track) and 36 75mm guns (M10)--to the three M4 medium tanks organic to the 62d Armored Field Artillery Battalion, which provided supporting fires for the division.

Armor, MBT: defender, 75	Substantially in error.	See comments in "Armor total, defender line" above. To consider tank de- stroyers mounting 3-inch guns main battle tanks is ridiculous given their light armor, and the low killing power of their armament against real tanks at long range. Tank destroyers might better be considered self-propelled artillery if they cannot be given a separate category of their own.
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HERO: The reviewer finds HERO "substantially in error." This number is the same as "Armor, Total, Defender," and the reviewer again invokes his argument for counting only the SPATs of one TD battalion. He then states that to categorize "tank destroyers mounting 3-inch guns (as) main battle tanks is ridiculous given their light armor, and the low killing power of their armament against real tanks (sic) at long range." In his opinion, TDs "might better be considered self-propelled artillery if they cannot be given a separate category of their own."

The 72 US TDs were the most powerful, efficient, and effective antitank weapons in the US force. They were, besides, highly mobile, a great advantage over the towed 57mm antitank guns organic to the infantry division. As for their ability to engage "real tanks" (the reviewer's terminology), the 899th TD Battalion claimed kills of 13 enemy Pzkw IVs on 23 March; it is worth remembering that this tank was the best tank in the Axis arsenal of that day.

Artillery: Could not confirm.  
defender, 34

I have very substantial reservations about this figure. The TOE of a US infantry division provided for division artillery of 72 pieces. HERO must have obtained its figure by adding in the total number of 81mm mortars in the 1st Infantry Division. While during World War I the US Army had considered the 81mm an artillery weapon, it rectified this error when it converted to the triangular division. Throughout World War II the Army used the 81mm mortar as an infantry weapon.

HERO: The reviewer could not confirm but expresses "very substantial reservations about this figure." He states that the HERO number "must have been obtained" by adding the number of 81mm mortars in an infantry division to the number of organic artillery weapons in the division (which he erroneously gives as "72 pieces"). It should be pointed out that the divisional artillery of a US infantry division in World War II consisted of four 12-gun battalions (48 guns); adding the 18 105mm infantry howitzers of the infantry cannon companies to this number gives a total of 66 pieces for the division.

Air sorties: attacker, 123	Could not confirm.	See the comment below in the "Air sorties, defender line".
Air sorties: defender, ?	Substantially in error.	Allied bombers flew 123 sorties in support of the 1st Infantry Division at El Guettar. This figure does not include fighter sorties (Howe, <u>North-west Africa</u> , 562). I suspect that HERO researchers misread Howe, assumed that 123 represented the total number of sorties by all aircraft, and then put that figure in the attacker rather than the defender line.

HERO. The reviewer has performed a service by pointing out a typographical error in the report, i.e., the 123 sorties entered on the attacker line should have been entered on the defender's line. Axis sorties are not known. The entry of 123 sorties for the attacker should be amended to 123+, to reflect the fact that this number was the number of bomber and fighter-bomber sorties, but does not include fighter sorties.

Total armor losses: attacker, 42	Could not confirm.	Howe reports nearly 30 German tanks destroyed. HERO should be queried as to the source of the figure they present.
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HERO: HERO reported 42. The reviewer "could not confirm" but, in one of the more remarkable statements of the review, says that "Howe reports nearly 30 German tanks destroyed" and that "HERO should be queried as to the source of the figure they present." Here is Howe's statement:

"American artillery and the tank destroyers of the 601st and 899th Tank Destroyer Battalions knocked out nearly thirty enemy tanks, and the minefield stopped eight more. Eventually, the morning attack was contained."

One may argue about what Howe means here by "stopped," but it is plain from the context that the eight tanks stopped by the minefield were destroyed or damaged.



HERO (cont.) Enemy armor losses, as reported in the records of the various US units engaged, were as follows: by antitank and artillery--30 tanks (2 PzKpfw. II, 15 PzKpfw. III, and 13 PzKpfw. IV); by mines--8 U/I tanks; by unknown causes--4 SPAT (76.2mm Pak 36(r) Sdkfz 132 or 139). This is the basis for HERO's total of 42.

Ref: Table 4. Intangible Factors

Combat effectiveness: N	Substantially in error.	The 10th Panzer Division was a veteran formation. El Guettar was the 1st Infantry Division's first action as a division.
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HERO: The reviewer finds HERO "substantially in error" in assessing the factor as "no factor" in the engagement. He is correct in his assessment of the CE of the 10th Panzer Division, but HERO considered the Centauro Division in its assessment and judged that the low CE of this unit offset the CE advantage of the 10th Panzer and brought the opposing forces into equilibrium in this category. The "veteran" status of both the 10th Panzer and the Centauro Division referred to by the reviewer is adequately covered by the assignment of an advantage by HERO under the head "Training and Experience." Incidentally, the low CE of the Centauro Division in the Gafsa-El Guettar operation is a recurrent theme of Field Marshal Messe in his two books (see comments on bibliography).

Intelligence: defender, x	Substantially in error.	El Guettar consisted of two major German attacks on the 1st Infantry Division. In the first which started before dawn the Germans achieved substantial surprise. The 1st Infantry Division beat off the panzers only by a narrow margin. Radio intercepts warned the Americans that the Germans would try again. When they did, the 1st Division "massacred" the 10th Panzer. HERO rates the defenders as "substantially surprised" in Table II and then gives them an intelligence advantage. Logically, these are contradictory assessments. Either HERO should distinguish between El Guettar I (the first attack) and El Guettar II (the second attack) or the intelligence function should be divided into phases.
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HERO: The reviewer finds HERO "substantially in error" in assigning an advantage in intelligence to the defender, particularly in view of the fact that the defender was substantially surprised (on which he and HERO agree). He finds this logically inconsistent.

There is no doubt that the 1st Division was surprised. There is equally no doubt that it had an advantage in intelligence. This is similar to the situation on the Suez Front at the outbreak of the 1973 Arab-Israeli War. The Israeli intelligence service was the finest in the world, and the Israelis had an intelligence advantage. They were, however, surprised. This was mainly because of the security measures taken by the Egyptians. The reviewer attempts to resolve the inconsistency he perceives by breaking the El Guettar engagement down into particles. HERO sees no inconsistency. The effects of surprise are not fleeting or radically transient as the reviewer implies; the 1st Division was still subject to these effects when it employed its intelligence advantage to organize to meet the second Axis attack.

Ref: Table 5. Outcome

Distance  
advanced  
(km/day):  
attacker, 6.0

Substantially in  
error.

The 6 kilometers in the table is the distance that the 10th Panzer penetrated into the 1st Infantry Division position. Actually the 10th Panzer assembled at Hill 587 east of El Hafay and then advanced. Uncertain of the American position, the Germans reconnoitered by fire as they moved up the El Guettar-Gabes road. The first indication to the 1st Division of the German presence came from their tracer fired. Howe, who provides the most detailed account of the battle, does not indicate where the Germans established their start line. If it was at Hill 587 then the 10th Panzer advanced 41 kilometers. If at the junction of the El Hafay road with the El Guettar-Gabes road, the 10th Panzer advanced 28 kilometers.

HERO: The reviewer finds HERO's assessment of 6 kilometers "substantially incorrect," although he acknowledges that this was "the distance that the 10th Panzer penetrated" into the US position. Apparently, he would opt for a distance of either 41 or 28 kilometers, depending on the location of the Axis start line. He does not know where the Axis start line was because Howe, his source, does not specify it.

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HERO (cont.) In this case the reviewer has confused the approach march--what the Germans call the aufmarsch--with the distance of opposed advance. In fact, Howe, in Map XI, shows the German-Italian front line on 23 March, and any logical individual may conclude that the Axis line of departure was directly behind this front line and that opposed advance began with passage of this line. The approach march, which may be made either partially or fully deployed, ends when contact with the enemy is established. On this basis, then, HERO rejects the assumption that distance advanced in the approach march can be included as part of the distance advanced in the engagement proper.

Ref: Table 6. Factors Affecting the Outcome

Force quality:	Substantially in	See comments on "Combat Effectiveness"
N	error.	in Table 4 above.

HERO: The reviewer finds HERO's judgment that force quality did not affect the outcome of the engagement "substantially in error." He apparently believes that the high combat capability of the 10th Panzer Division, approximately 50% numerically of the attacking force, did affect the outcome. This might have been the case had the Axis forces won. HERO rejects the reviewer's judgment not only because the force with the higher quality did not win, but also for the same reason given in the discussion under "Intangible Factors; Combat Effectiveness," above.

Reserves:	Substantially	HERO's definition of reserves does not distinguish between those forces held outside the battle area subject to control by a higher commander and those forces within the area subject to control by the local commander. The analysis would gain in precision if HERO made the distinction. In the fighting at El Guettar on 23 March at least two battalions arrived from II Corps reserve at midday. However, this is not to say that General Allen may not have maintained a divisional reserve. Howe discusses the action from the perspective of the division headquarters. He mentions regiments and battalions only in passing. Yet to understand just how the battle was fought, i.e., to provide meaningful answers to the questions that HERO is raising, the analyst needs to know
Defender, x	correct.	

what happened down to the battalion level at the very least. The narrative gives no indication that HERO has done that kind of research.

HERO: The reviewer concurs in HERO's judgment that the availability and commitment of US reserves affected the outcome of the engagement. He mentions the arrival of two unnamed battalions from the II Corps reserve (which did not happen); stating that "this is not to say that General Allen may not have maintained a divisional reserve" (of course, he did, and this is where the "two battalions" and other reserves committed to the combat came from); stating that Howe, his principal source, discusses the engagement "from the perspective of the division headquarters" (which is not correct); and asserting that "the analyst needs to know what happened down to battalion level at the very least" in order "to understand just how the battle was fought, i.e., to provide meaningful answers to the questions that HERO is raising" (HERO has not raised any questions); and concludes that "the narrative gives no indication that HERO has done that kind of research." . . . HERO has seen all the pertinent operational records of the ground forces engaged; other than the records of most of the artillery battalions, the battalion records of other units have disappeared or exist in a few cases in fragments.

Maneuver, mass,	Substantially in	The 10th Panzer did mass on a narrow
narrow front:	error.	front. See discussion of "Width of
attacker, N		Front, attacker line" for Table 1.

HERO: The reviewer finds HERO's judgment that this was not a factor affecting the outcome "substantially in error." Here again it is a matter of interpretation of the facts of the engagement, and in HERO's opinion the reviewer has again confused the approach march of the 10th Panzer with the attack of the division itself. The 10th Panzer approached the combat along the axis of the Gafsa-Gabes road; the division's axis of attack was likewise generally along this route. This was dictated by the terrain. However, at the moment contact was established with the US force, the front of the division was approximately 7-8 kilometers--a relatively broad front for a division with a numerical strength of approximately 5,300 men. What massing there was occurred among the mechanized and motorized vehicles of the division on the approach, particularly in the passage of the Guetaria between Djebel el Krerouna and Djebel el Meheltet. The terrain, and the fire positions of an Italian artillery battalion on the northern slope of Dj. el Krerouna--directly in the path of the approach--dictated a long, columnar formation for the passage of this defile. However, once the defile was passed, the division was able to deploy on a broad front.

HERO (cont.) Dispersion was also dictated by the lack of cover in the main combat area. Cross reference of Howe's map and the 1st Division's overlays with the reports of units involved will reveal that the significant fighting incident to the repulse of the second attack occurred along a front of approximately 20 kilometers (another indication of Italian involvement, particularly in the south against the 1st Ranger Battalion). It is thus HERO's opinion that this factor was not significant in affecting the outcome of the combat.

Logistics: attacker, N	Substantially in error.	In the interlude between the two German attacks, a convoy of 19 US jeeps ran a gauntlet of shell fire and Stuka attacks to the divisional supply dump. Thirteen jeeps safely returned with ammunition resupply for the front line units just prior to the second attack.
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HERO: The reviewer finds HERO "substantially in error" for its judgment that logistics was not a factor in the outcome of the battle. He gives as his reason for disagreeing with the HERO judgment a story about 13 of 19 US jeeps successfully negotiating a gauntlet of enemy fire to bring ammunition resupply to front-line units in the interval between the enemy attacks. This is an example of a flawed, "worm's eye" analysis. Does the reviewer seriously believe that this small jeep convoy affected the outcome of the battle? Does he believe that if it hadn't occurred the 1st Division's defense might have collapsed? There is surely no basis for such an assumption. Further, with respect to this incident, does the reviewer believe that there is anything remarkable about it other than the gauntlet of fire and the presumed loss of six jeeps? Is the story interesting as a record of personal heroism and devotion to duty, or is it remarkable as a logistical achievement? How did the events related differ from ordinary battlefield resupply procedures? (Howe, incidentally, relates the story but does not comment further.)

The plain facts respecting US logistics in the El Guettar operation are spelled out in the report of the 1st Division's G-4 for 17 April 1943. Supplies of all classes of materiel throughout the operation were "normal," and the only difficulty encountered was in the evacuation of casualties. This was due to the rugged terrain.

## APPENDIX B - ANNEX VII

ITRI-FONDI, WORLD WAR II  
 20-22 May 1944  
 (Reviewer: Agency I)

## CATEGORY

## COMMENTS

Ref: Table 3. Strengths and Combat Outcomes

The numbers on this chart cannot be checked because no citations are given. Of the three references given, one is a German language unpublished study dated 1983 and is not readily available. The other two are secondary sources and do not give the data presented in this chart. Additional sources consulted give slightly different figures. The 88th I.D. G-1 reports list assigned and attached strength from 18,937 to 17,543 during the period. An ORO Study put the number on 20 May at 17,551, and on 22 May at 16,884. The ORO Study gave 6,206 for the strength of the German 94th Division. HERO listed 257 casualties for the 88th I. D. and 380 for the German 94th. The ORO Study listed 162 casualties for the 88th I. D. and stated that after the 16th of May practically no records were kept for the German 94th Division. HERO's figures may indeed be the more accurate, but without the proper documentation, one can only assume they are subjective and, therefore, should be accepted as good guesses rather than fact.

HERO. This is a fair and reasonable comment. The figures are, in fact, based upon meticulous research in the primary sources, including the morning reports for the 88th Division, and the microfilmed records of German forces available in the National Archives. (They are very close to the figures in the German study cited.) This is amply documented in at least two HERO reports. Since we had been informed that CAA did not consider HERO reports as adequate reference, we simply omitted these sources in the case of this battle, and similar sources in perhaps as many

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as 60 other battles in the report. In the light of the time constraints under which we were operating, there simply was not adequate time to go through the files of work papers for these reports to identify all of the original raw record sources. The data is available, and open for anyone who wishes to go through those records. For the moment, we do not have the time to do this detailed search. However, we do believe that our terms of reference provide adequate authority to use the results of our previous research experience to support our interpretations and statements of opinions and assessments.

Ref: Table 4. Intangible Factors

All factors  
(except  
combat  
effectiveness  
defender)

As mentioned above, HERO cites these sources: Fisher, Ernest F., Jr., Cassino to the Alps; Forsyth, John P. COL, Fifth Army History, Vol. V; and Muhm, Gerhard COL, "Verluste der HG SUD Wahrend der 4. CASSIONOSCHLACHT and der Schlact um ROM (11.5-3.6, 2944)". This latter source was not checked and could be the fountain from which all the information flows. However, the "Green Book" Cassino to the Alps is an excellent source for units, places, and events. It is an official history and starting point for an investigation of the Italian campaign but contains limited analysis. The Fifth Army History is also an official history with little analysis. Itri-Fondi is such a minor operation that these sources contain very limited information and practically no analysis. Therefore, it would take a great deal of interpretation to come to the conclusions listed in these charts.

HERO. The commentator correctly points out that the official history reference sources cited in the HERO report contain "limited," or "little analysis." Except for the German source cited, he sees little basis for our assessments, remarking: "It would take a great deal of interpretation to come to the conclusions listed in these charts."

Again the observation is fair and reasonable. However, as pointed out in the previous comment, HERO had adequate basis for these interpretations.

Ref. Table . Outcome

All  
factors  
(except Victor)

See comment in Table 4.

Ref: Table 6. Factors Affecting Outcome

Force quality,  
leadership,  
planning,  
surprise,  
maneuver/mass,  
logistics,  
fortifications,  
depth

See comment in Table 4.

HERO. This commentary has numerous "remarks" in the righthand column, some apparently intended to amplify HERO's narrative, others raising some questions of substance. A serious effort to review the battle and HERO's entries seems to have been made. The reviewer found no incorrect entries, but had two principal comments on Tables 3 and 4 of the HERO report.

It seems quite clear that the commentator did not fully understand the terms of reference and guidance provided to HERO by CAA.

Despite apparent lack of background information, the commentator was professional, objective, scholarly, thorough, and fair. Whoever he may be, HERO is pleased to salute him.



## APPENDIX B - ANNEX VIII

ITRI-FONDI, WORLD WAR II  
20-22 May 1944  
(Reviewer: Agency 2)

The study lists three references, none of which takes advantage of the very large literature produced both before and after the publication of the "Green Book" series. The most cursory view of the battle would, however, highlight the importance of US leadership in taking advantage of the changing situation on the German side, particularly that of BG Paul W. Kendall, the 88th Division Assistant Commander. Kendall was at exactly the right place at exactly the right time on two separate occasions when his presence proved critical to maintaining the momentum of the American effort. This is not noted in the matrix. The impact of weather, e.g., morning fog and occasional rain, is also not properly covered.

HERO: The commentator asserts that the actions and orders of BG Kendall should have been reproduced in HERO's matrix. He does not suggest how this could be done.

The writer of this rebuttal yields to no one in his admiration for General Kendall, beginning from the time when (as a lieutenant) he won the Distinguished Service Cross for performance that warranted the Medal of Honor. But his undoubted leadership was only one element of the exceptional leadership present in this division, and which was matched by the opposing German leadership. . . .

## APPENDIX B - ANNEX IX

JEBEL GENEIFA, ARABIAN-ISRAELI WAR (1973)  
 19-21 October 1973  
 (Reviewer: Agency 1)

CATEGORY		COMMENTS
Ref: Table 1. Identification		
Engagement: Jebel Genefa, Egypt	Substantially correct.	Though this engagement had a definite location, it was, however, part of a continuous operation with a larger objective.
Dates: 19-21 October 1973	Substantially correct.	The memoir by the Israeli general most involved in the action (Adan) give the dates as 19-20 October.
Forces attacker: Is Adan Div(+) defender: Eg Third Army(-)	Substantially correct.	The notation "e.g., Third Army (-)" does not tell the whole story, however. The 3d Army was to a large extent deployed on the other (eastern) side of the Canal from this action.
Duration: 1 Day	Substantially correct.	But see comment under "dates".
Width of front (km) 18.0	Substantially in error.	It is not clear whether this figure is the result of the application of HERO QJM methodology. It appears in no source, and it is obviously meaningless in an action characterized by such fluidity as this one was. Adan, the Israeli commanding general, describes an advance on a two-brigade front, but this too is very inexact.

HERO. In the case of the HERO report, the width of front was estimated from General Adan's personal operations maps, which had been made available to HERO by General Adan. The commentator should also realize that one does not need to refer to a source to support measurements on maps.

The suggestion by the commentator that the estimated width of front could in any way have been derived from the QJM methodology reveals that he knows absolutely nothing about that methodology.

Ref: Table 2. Operational and Environmental Variables

Surprise: N	Substantially in error.	The IDF did not surprise the Egyptians with the crossing itself; it was hotly contested. BUT Egyptian units further south were definitely surprised at the size and speed of the Israeli penetration to the Geneifa Hills.
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HERO. The HERO report says that surprise was not a factor at Jebel Geneifa.

The Israeli crossing of the canal on October 15 did surprise the Egyptians substantially. It is amazing to suggest otherwise, and to support this by saying that the crossing was hotly contested. In fact the crossing itself was such a complete surprise that it was not contested in the slightest. However, ancillary, supporting operations were, indeed, "hotly contested" in some of the bitterest fighting of the war. But by the time that General Adan's forces entered Jebel Geneifa, the Egyptians knew very well where he was, and what he was doing. They simply didn't have forces available to stop him.

Level of surprise --	Substantially in error.	The Egyptians did not fathom the Israeli intent and resorted to considerable self-delusion about the strength and direction of the Israeli penetration once IDF forces were over the Canal.
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HERO. The commentator is criticizing HERO twice for asserting that there was no surprise. The remarks are not really relevant.

## Ref: Table 3. Strengths and Combat Outcomes

Air sorties: attacker, 240 defender, 150	Could not confirm.	No specific figures available in secondary sources. <u>The Ramadan War, 1973</u> (in many ways inaccurate) offers only total figures for air sorties over the entire Third Egyptian Army zone, which included both sides of the Canal at this point in the war.
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HERO. Specific figures for air sorties have been estimated by HERO on the basis of interviews of participants, and very limited official data. The methodology for estimation of the sorties has been presented in various HERO official reports, and a General Sessions meeting at MORS. Familiarity with some classified data available later provides confidence that the methodology is reasonably accurate.

Aircraft losses total, ?	Could not confirm.	One source gives a figure of 102 Israeli aircraft lost for the entire war.
-----------------------------	--------------------	--

HERO. HERO has no way of knowing what the aircraft losses were in relation to this operation. The figure should be 103 or 109, depending on the method of counting.

## Ref: Table 4. Intangible Factors

Combat effectiveness attacker, x defender, o	Substantially correct.	This statement reflects the fact that the initiative of the war at this point was with the Israelis, but overlooks the fact that the Egyptians were far more combat effective than they had been in 1967, a fact that still had a heavy impact on the political settlement eventually reached.
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HERO. The relative combat effectiveness of the two sides had nothing to do with which had the initiative; it was a matter of relative fighting quality . . . . The commentator could not be more wrong than in his assessment of the relative combat effectiveness of the Egyptians with respect to the Israelis in 1967 and 1973. His attention is invited to Appendices A and B of Elusive Victory, HERO's "in-house source."

## Ref: Table 5. Outcome

Distance advanced (km/day): 40.0	Could not con- firm.	Though close to actual by measurement on a map, the distance traveled on the ground is apt to be more than that stated here. It is also not clear where this measurement starts and ends.
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## Ref: Table 6. Factors Affecting Outcome

Air super- iority: attacker, x	Could not con- firm.	The statement does not address the fact that Israeli air supremacy was threatened constantly until the erosion of the missile defenses of the Egyptians. Many of the missile batteries were located in the Geneifa Hill mass. Adan is so taken with them that he enumerates them by their designations as they are taken out, usually by long range tank fire. As this process goes on, Israeli air superiority is less and less challenged.
Terrain, roads: N	Substantially correct.	Statement holds up as applied to armored forces, but there was an effect on Israeli (and therefore on Egyptian) truck traffic that formed the logistical tail of engaged units.
Leadership: attacker, x	Substantially correct.	Definite advantage held by Israeli leaders for bold decisive leadership. Egyptian small unit leadership effective, but breakdowns at brigade and higher levels.
Planning: N	Substantially correct.	Israeli drive was an exercise in exploited opportunity. Only a broad plan followed after the breakout, BUT, there was a fundamental rigidity to Egyptian strategic plans in this war. The initial successes were consolidated only within range of the SAM

defenses on the west side of the Canal, and they were indeed formidable. Israeli improvisation and the erosion of the SAM defenses gradually turned the Egyptian plan against itself. The political settlement Sadat was aiming at required that he keep the bulk of his forces over the Canal on former Israeli "turf". This contributed to an unwillingness to withdraw force to meet Adan's thrust to the south.

Surprise:  
N

Could not confirm.

With poor intelligence at the lower levels of the Egyptian command at the opening stages of this action and in the aftermath of the Israeli crossing of the Canal, the Israeli force did achieve strategic surprise. This is not to say that the Egyptians did not fight well in specific instances, over-coming the initial shock of the Israeli appearance in force. Defense was, however, uncoordinated and without commitment of a real strategic reserve on the Egyptian side.

Maneuver, mass,  
narrow front:  
N

Substantially in error.

Maneuver was definitely the essence of Israeli success here. The Adan Division went around Egyptian strong points in the advance of the hills. Adan writes that he went to and through the hills precisely to avoid having to fight his way down the defended road on the east short of the Bitter Lakes. The road lay between the lakes and the hill mass. He also attacked the hill to get at the SAM installations there.

HERO. The HERO report states that maneuver was not a factor in the outcome of the battle. In other words, there was no effort either to envelop one or the other of the Egyptian flanks, or to mass on a narrow front for penetration. The Israelis advanced on a broad front relying--with justification--upon their general superiority to enable them to advance rapidly without resort to special maneuvering.

Naturally one of the elements of Israeli superiority over their enemies was superior small unit tactics and battle drill, involving local maneuver. This superiority is shown elsewhere.

Fortifications: Substantially  
N correct.

Many Egyptian positions on the hills were sandbagged and some were in hard fortifications, but were generally not organized in depth for continuous infantry defense.

#### Works Consulted by Reviewer

Adan, Abraham (Bren), On the Banks of the Suez; An Israeli General's Personal Account of the Yom Kippur War, San Francisco, Calif.: Presidio Press, 1980.

Allen, Peter, The Yom Kippur War, New York: Charles Scribner's Sons, 1982.

Badri, Hassan al, et. al., The Ramadan War, 1973, Dunn Loring, VA: T. N. Dupuy Associates, Inc., 1978.

Bartov, Hanoch, Dado; 48 Years and 20 Days, Tel Aviv: Ma'ariv Book Guild, 1981.

Dupuy, Trevor N., Numbers, Predictions, and War: Using History to Evaluate Combat Factors and Predict the Outcome of Battles, Indianapolis: Bobbs-Merrill Company, Inc., 1979.

Herzog, Chaim, The War of Atonement, October 1973, Boston: Little, Brown and Co., 1975.

Insight Team, London Times, The Yom Kippur War, Garden City, N. Y.: Doubleday & Co., Inc., 1974.

O'Bailance, Edgar, No Victor. No Vanquished; The Yom Kippur War, San Rafael, Calif.: Presidio Press, 1978.

US Army Command and General Staff College, Selected Readings in Tactics; The 1973 Middle East War, RB 100-2, Vol. 1, Fort Leavenworth, Kansas: USACGS, May 1975.

Williams, Louis, ed., Military Aspects of the Israeli-Arab Conflict, Tel Aviv: University Publishing Projects, 1975.

HERO. Omitting Elusive Victory, presumably because it is HERO's "in-house source" about the war, the bibliography includes another book by T. N. Dupuy, Numbers, Predictions, and War, which has nothing to do with the war, although it includes--for analytical purposes--some of the data to be found in Elusive Victory.

HERO (cont.) The bibliography includes two most unreliable books on the war: Peter Allen's The Yom Kippur War, one of the worst and least reliable books ever written about any war, and O'Ballance's No Victor No Vanquished, which is not much better. The London Times Insight Team book, published in 1974, rushed out within a few months of the war, is excellent journalism, but became an unnecessary and unreliable source after the Herzog, Badri, and Dupuy books on the war were published.



## APPENDIX B - ANNEX X

JEBEL GENEIFA, 1973 ARABIAN-ISRAELI WAR  
19-21 October 1973  
(Reviewer: Agency 2)

## CATEGORY

## COMMENTS

Ref: Table 2. Operational and Environmental Variables

Surprise:  
NSubstantially  
correct.

A value judgment, perhaps, but it is highly likely that the Egyptians were not aware of the true Israeli strength on the West Bank of the Suez, and Adan's attack may have had a degree of surprise greater than the study indicates.

Air super-  
iority:  
attacker, xSubstantially  
correct.

While it is true that the Israelis had air superiority, the density of the Egyptian air defense network prevented the Israelis from bringing the full potential of their air force to bear. In fact, one of the major objectives of Adan's attack was the destruction of the Egyptian air defense belt in this sector.

## APPENDIX B - ANNEX XI.

KUNEITRA, ARABIAN-ISRAELI WAR (1973)  
6-7 October 1973

## CATEGORY

## COMMENTS

Ref: Table I. Identification

Date(s):

6-7 Oct 73

Both references (Dupuy, Elusive Victory and Herzog, The War of Atonement) indicate the assault on Kuneitra begins on the afternoon of the 6th and continues until late morning of the 9th. There is no clear break in the action on the 7th.

HERO. There was no assault on Kuneitra. The Arabs could have walked into it unopposed, had they been so inclined.

This battle was a holding attack by the Syrian 9th Division. There was a clear lull in the battle on the 7th. That, however, is not the reason why the engagement is shown as ending. Because of the breakthrough of the 5th Division, to the left of the 9th, there was a complete change in the defending organization, and in the whole nature of the battle along the front. Thus the fighting in this area that continued (sporadically) until the 9th, was part of an entirely new engagement.

Forces:

attacker,  
Syr 9th Inf  
Div (+)  
Is 7th Armd  
Bde (-)(+)

According to the references, the Israeli 7th Armored Brigade defending Kuneitra is attacked by elements of both the Syrian 7th Infantry Division and the 9th Infantry Division; the former north and the latter south of the abandoned town. In Dupuy's own study, he says "The Israeli 7th Armored Brigade was having little difficulty in repulsing continuing efforts of the Syrian 7th and 9th Infantry Divisions to penetrate north and south of Kuneitra" (p. 453).

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Commanders:  
defender, Col  
BenGal

Herzog identifies the Israeli  
Commander as "COL Avigdor", not  
BenGal.

HERO. Herzog also refers to him as "Yanush." As is clearly stated in the HERO report, this was Col. Avigdor Ben Gal. The commentator apparently does not realize that it is the practice in the Israeli Army (for several reasons) to refer to people by first name or nickname. In fact, Herzog probably could not have gotten clearance from the Israeli Army security in 1975 to refer to Ben Gal by his last name . . . . In Elusive Victory this officer is identified as Col. Avigdor Ben Gal.

Duration (days):  
2

Sources indicate the entire action  
takes place in the space of four days  
and three nights.

Width of front (km):  
3.0

Herzog says the 7th Brigade fought in  
an area "12 miles wide and 1-2 miles  
deep", while most Syrian forces  
attacking him concentrated in an area  
some 6 miles wide.

Ref: Table 2. Operational and Environmental Variables

Weather:  
DSH

Some of the engagement took place in  
darkness with cool evening temper-  
atures.

Surprise:  
attacker, x

Israelis did have some warning, so  
surprise was not complete.

Level of  
surprise:  
substantial

Numbers, not surprise, substantial.

HERO. Both numbers and surprise were substantial.

Air super-  
iority:  
N

Dupuy claims in Elusive Victory (p.  
450) that the Israelis dominated the  
air over the Golan and attacked  
armored spearheads and "had some  
effectiveness" against the Syrian  
lines of communication.

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Dupuy in Elusive Victory (P. 456) indicates that some of the Israeli success can be attributed to air strikes which hindered Syrian resupply, although it was the ground forces which were decisive.

Ref: Table 3. Strengths and Combat Outcomes

Personnel, total  
attacker, 17,750  
defender, 3,630

These figures do not appear in either source and, even though through the narratives, it is impossible to find totals of actually engaged forces or equipment. Numbers that are given are not footnoted in either reference. Many figures given in the reference are stated as approximate.

Armor total:  
attacker, 75  
defender, 50

See comment above.  
See comment above.

Armor, light:  
attacker, 2

See comment above.  
Herzog claims that at no time on the first day of battle did the Israeli tanks number more than 40.  
See comment above.

defender, 4

Armor, MBT  
attacker, 73  
defender, 46

See comment above.

Artillery pieces  
attacker, 115  
defender, 12

See comment above.

Air sorties:  
attacker, 49  
defender, 107

See comment above.

Battle casualties  
total:  
attacker, 350  
defender, 200

See comment above.

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Percent per day:

attacker, 1.0

defender, 2.8

See comment above.

Armor losses total:

attacker, 40

defender, 14

See comment above.

Percent per day:

attacker, 26.7

defender, 14.0

See comment  
above.

Ref: Table 7. Combat Forms and Resolution of Combat

Main attack and  
scheme of  
defense:

attacker, F, E (LF)

defender, D

Israeli 7th Armored Brigade is hit  
frontally as well as on both flanks

HERO. Operations near Kuneitra involved a holding attack by the Syrian 9th Division against the right wing of the Israeli 7th Armored Brigade, to which some elements of the 188th Brigade had been attached. The 9th Division did operate against both the front and right flank of this force. The Syrian 7th Division operated against the main body of the 7th Armored Brigade in a frontal attack. There was no effort to envelop the left flank of the 7th Brigade.

Resolution,  
attacker

See comment Table 1 - Forces.

attacker, PS  
defender, S

Since there is no clear break in the action, it is difficult to see why HERO lists the engagement as two days. If one accepts this, then penetration and stalemate are correct. However, the actual engagement has, according to the sources, "Resolution" for the Attacker as "Penetration" and "Withdrawal with serious losses". The Defender "Withdrawal" and "Repulse" of enemy forces.

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## GENERAL COMMENTS

There are a significant number of studies on the 1973 Israeli War published after the two studies (1975, 1978) HERO has utilized. Since the HERO study was published in 1983, I would have been more comfortable with the data if some of the more recent works were used.

HERO. There have been only two truly authoritative studies of the 1973 Arab-Israeli War published: Herzog and Dupuy. Just because other works, all less reliable, have been published since, doesn't change this basic fact.

## APPENDIX B - ANNEX XII

SAN JUAN/EL CANEY, SPANISH AMERICAN WAR  
1 July 1898

## CATEGORY

## COMMENTS

Ref: Table 1. Identification

Date/duration:

1 July 1898

1 Day

Although perhaps a "dealer's choice", the DATE (1 July 1898) and DURATION (1 day) given for the battle of San Juan/El Caney might be questioned in view of the continuation of the battle (including Spanish counter-attacks) on 2-3 July. In fact, General Shafter himself considered the three day's fighting as one engagement (see Annual Report of the Major General Commanding the Army for 1898, page 157). Statistical data for the battle is presented on the three day basis in several sources. Obviously, if one accepts a three-day duration the subsequent tables in the HERO study would require revision. My subsequent comments are based on the 1 July actions alone.

Ref: Table 2. Operational and Environmental Variables

Weather:  
DSHTechnically  
correct.

Table 2 indicates the engagement was fought under dry, sunshine, and hot conditions. Although technically correct as far as could be determined for 1 July this data element is misleading inasmuch as it fails to take into account the considerable rainfall before and after 1 July which had a significant impact on the morale as well as the mobility of both opponents.

Season:	Questionable.	Characterization of the season as ST
ST		(Summer-temperate) is questionable. Although with respect to light conditions, Santiago de Cuba may be considered in the temperate zone, it certainly is not with respect to climate. The STp (Summer-tropical) category is perhaps more accurate.

Ref: Table 3. Strengths and Combat Outcomes

Strengths:	Correct.	<p>Statistical data on strengths and casualties are always difficult to determine accurately, and the result is often more a reflection of the counting method of the compiler than it is an accurate statement of reality. In some cases my calculations differ substantially from those of the HERO compiler. . . . The figures given in Table 3 for TOTAL STRENGTH (US = 15,065; Spanish = 1,592) can be supported from the sources I examined, although two of the more reliable (Steele and Sargent) give the Spanish total as 1,717. While the US Cavalry strength cannot be accurately determined, as is indicated in Table 3, the Spanish force of 1,592 clearly includes 140 mounted guerillas held in reserve behind San Juan Ridge. Thus, the Spanish Cavalry should perhaps be listed as "140+" rather than "?". I can account for only 34 US guns (versus 38 noted in Table 3), and I too count a Spanish guns (although most sources also refer to an additional 17 ineffective old pieces at various locations in the Spanish line as well as three relatively modern pieces in reserve in Santiago but apparently not in action). The discrepancies are not significant.</p>
attacker:		
Total, 15,065		
Cav, ?		
Arty, 38		
defender:		
Total, 1,592		
Cav, ?		
Arty, 4		



Casualties: Incorrect.  
 attacker  
 total, 1,572  
 %/day, 10.4  
 defender  
 total, 850  
 %/day, 53.4

Here the sources vary widely, and my calculations do not agree with those of Table 3's compiler. The best estimate of US casualties seem to be 1,534 or 1,593 (Annual Report...) for three days. The compiler of Table 3 apparently derived the figure of 850 Spanish casualties from Dupuy and Dupuy. According to the best evidence the Spanish had 355 killed, wounded, or captured at El Caney and about 440 casualties at San Juan/Kettle Hill for a total of (+/-)795. I could not determine how the figure of 850 was calculated from available data as such a total does not appear in any source other than Dupuy and Dupuy.

Ref: Table 4. Intangible Factors

Morale/logistics:  
 N

With respect to morale and logistics I would give an advantage to the US on 1 July rather than considering the two forces comparable. However, this is a judgment call not subject in this case to stringent rational criteria.

Technology:  
 C

More significantly, Table 4 indicates that the two opponents were comparable with respect to technology. It seems to me that the often mentioned Spanish use of smokeless powder versus the black powder weapons of US forces is sufficient grounds to assign the Spanish a technological advantage in this engagement; especially since the use of black powder by the US had a real effect on the battle. In point of fact the HERO compiler notes the Spanish advantage in the narrative on page 234 of Volume III.

Ref: Table 6. Factors Affecting Outcome

Leadership:  
attacker, x

In Table 6 the US forces are given a decisive advantage in leadership, but in Table 4 this factor is evaluated as comparable for both sides. This inconsistency should be resolved. My assessment is that both sides were evenly matched with respect to leadership.

Planning:  
attacker, 0

I do not understand the basis for indicating that the US had a "dis-advantage decisively affecting the outcome" with respect to planning when the US was the victor. Most authorities agree that the US plan could have been better, but despite its deficiencies it produced the desired outcome and was clearly not a decisive disadvantage.

Sources Consulted by Reviewer

The HERO compiler lists only three sources for the evaluation of the battle of El Caney/San Juan on 1 July 1898. Of these only Matthew Forney Steele's American Campaigns has any substantial value for an assessment of the engagement. Even so, I cannot determine how the HERO compiler arrived at certain data using only the sources listed. I question the general reliability and usefulness of information on this engagement which has not been checked against the easily accessible better sources among which are:

- a. The official reports of various US commanders and staff officers contained in the Annual Report of the Major General Commanding the Army, 1898.
- b. Sargent, Herbert H., The Campaign of Santiago de Cuba, Chicago, A. C. McClurg, 1907 (old but detailed and apparently reliable, particularly with respect to statistics).
- c. Tejeiro, Jose Miller y, Battles and Capitulation of Santiago de Cuba, Washington, D. C., GPO for the Office of Naval Intelligence, 1899 (for Spanish view).

d. More recent comprehensive studies are:

- (1) Trask, David, The War with Spain in 1898.
- (2) Cosmas, Grahah, Army for Empire.

In short, my evaluation is that the HERO compiler did not take advantage of the better (and more accurate) sources in compiling the data on the battle of El Caney/San Juan.

HERO: See comment on Essen Hook, page B-V-3.

## APPENDIX B - ANNEX XIII

BEMIS HEIGHTS, AMERICAN REVOLUTION  
7 October 1777

## CATEGORY

## COMMENTS

Ref: Table 1. Identification

## Forces:

defender, Am Army

The identification of the British as attackers and the Americans as defenders is erroneous. The British advanced forward of their fortifications for a distance of less than a mile and deployed but did not attack the Americans, save for a small skirmishing party which fired on the American breastworks. The Americans had detected the British advance and their exposed position. They maneuvered to the flanks and front of the British and launched the attack. Thus, the British were caught standing by an American attack which hit them first in the flanks, then in the center. The Americans maintained the momentum of the attack (momentum was a key factor in the fight), driving the British forces back on their prepared fortifications where the Americans launched two attacks, the second one capturing the Breyman redoubt. Thus, the HERO identification of attacker and defender, type of attack and defense, importance of momentum, the effect of mass and maneuver, and influence of fortifications are all incorrect.

attacker, Br Army      Incorrect.

Width of front (km): 3.2	Incorrect.	Information not contained in the source cited. However, the "front" of the battlelines changed during the battle as it flowed back into the British fortifications. Even at the beginning, the British battleline was less than a mile wide.
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Ref: Table 2. Operational and Environmental Variables

Defender posture: FD	Incorrect.	See comment for Forces above.
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Ref: Table 3. Strengths and Combat Outcomes

Personnel total: attacker, 5,000	Incorrect.	Numbers listed show approximate totals for each army, not the numbers actually participating in the battle. Forces actually engaged were substantially less than those shown. Even approximate numbers of those actually engaged are impossible to determine from the HERO source.
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defender, 11,000		See comment above.
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Battle casualties total: attacker, 600 defender, 130	Incorrect.	Source cited states that British casualties were about 600 and American casualties were about 200. A careful historian, Hoffman Nickerson, puts American losses in the 80's. Since exact returns were not submitted by either army, no one can be precise about casualty figures. Although the HERO source does not mention the fact, six of the ten British artillery pieces were overrun and captured by the Americans. The percentages of casualties shown reflect losses as a percentage of each <u>army</u> , not as a
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percentage of those forces actually engaged. In any case, such percentages are wrong, given the imprecise nature of numbers of forces engaged, casualties, and total forces.

Percent per day attacker, 12.0 defender, 1.2	Incorrect.	See comment above.
Artillery pieces lost: attacker, 0 defender, 0	Incorrect.	See comment above.
Advance km/day: defender, 3.2	Incorrect.	See comments at Forces and Width.

Ref: Table 4. Intangible Factors

Leadership: defender, x		This is strictly a judgment call. Neither of the Army commanders distinguished himself in the Saratoga campaign. Subordinate brigade and regimental commanders in the two armies generally were good. A "comparable" rating probably comes closer to the mark with this factor.
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Training/ experience: C	Incorrect.	Proficiency of selected units aside, as an army, the British should be given "advantage" here.
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Morale: C	Incorrect.	Primary and reliable secondary sources indicate that morale among the British <u>as an army</u> was poor and was a factor in their performance in the battle. Specifically, the animosity shown by British officers, including Burgoyne, towards the Germans was an important factor. Also important was fundamental disagreement among senior officers as to the proper course of action for the British to take. Reduced rations for men and animals and their desperate tactical circumstances also were important morale factors.
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Momentum: N	Incorrect.	See comment at Forces above.
Intelligence: N	Incorrect.	See comment at Forces above.
Initiative: attacker, x	Incorrect.	This judgment gives an erroneous impression of events. The British had initiative only in the sense that they moved first, because they <u>had</u> to. Despite this necessity, the mission of the British force was not clear, the plan was fuzzy, and there was considerable disagreement among Burgoyne and his subordinates as to the composition of the force.

Ref: Table 5. Outcome

Distance advanced (km/day): attacker, 3.2	Incorrect	See comments at Forces and Width above.
Mission accomplished: attacker, 4 defender, 9	Could not be checked.	These numbers could not be checked, and one cannot see how they are arrived at. It is difficult to understand how the British could be given any points for this engagement.

Ref: Table 6. Factors Affecting Outcome

Reserves: N	Incorrect.	The British decision not to use more of their available forces for the advance, and their failure to use available reserves once the Americans drove them back, were significant factors.
Maneuver, mass: N	Incorrect.	See comment at Forces above.
Logistics: defender, x		Logistics was a <u>significant</u> British disadvantage, it having goaded Burgoyne to attempt the advance to begin with. See comments at Morale and Initiative above.

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Fortifications: Incorrect.

See comment at Forces above.

N

Ref: Table 7. Combat Forms and Rescution of Combat

Main attack and Incorrect.  
scheme of  
defense

See comment at Forces above.

attacker, F  
defender, D/O, F

#### Sources Consulted by Reviewer

Burgoyne, Lieutenant General, A State of the Expedition from Canada as Laid Before the House of Commons, reprint edition New York: New York Times and Arno Press, 1969.

Digby, William, William Digby's Book: Campaign of 1777, by an Officer in the Northern Army...Found in Baxter, James Phinney, The British Invasion from the North, Albany, Joel Munsell's Sons, 1887.

Nickerson, Hoffman, The Turning Point of the Revolution, or Burgoyne in America, Boston, Houghton Mifflin Company, 1928.

HERO: Since comments on this battle were not specifically requested by CAA, HERO did not choose to comment other than as noted on Esser Hook, page B-V-3.



## APPENDIX B - ANNEX XIV

## GENERAL COMMENTS - RUSSO-Japanese War

1. REF: TABLE 1, IDENTIFICATION. The identification of forces is meaningless. For a comparative basis the reader should know at least what constitutes a Japanese Army or a Russian Army. "Russ Army" at Yalu River is misleading because it was the 1st Siberian Army Corps.
2. REF: TABLE 2, OPERATIONAL AND ENVIRONMENTAL VARIABLES. A key point about the war was the winter in Manchuria which was the mildest in over sixty years. This was an advantage to the Japanese who were very apprehensive about conducting operations in winter against the Russians. The Liaoyang example does not mention that mid-August is the height of the rainy season in Manchuria and flooded rivers influenced the Russian commander's operational and tactical decisions. The surprise element needs amplification. The Japanese normally had excellent intelligence of Russian troop movements and locations. Conversely, the Russians remained ignorant of Japanese dispositions until it was almost too late. Moreover, the skillful Japanese use of camouflage, concealment, and deception caught the Russians unprepared time and again. This is particularly true of the flanking movements seen at the Yalu, Telissu, and Liaoyang.
3. REF: TABLE 3, STRENGTHS AND COMBAT OUTCOMES. According to reliable Japanese sources, all strength figures HERO cites are in error. In addition, the simple rendering of artillery pieces omits the crucial information that the Japanese had more heavy artillery pieces (nearly three times as many (2.95) at Mukden) than the Russians. The heavy artillery neutralized the fortification advantage the author assigns. Cavalry was never significant during the war. Japanese cavalry was still unaccustomed to its role, and the Russian cavalry seemed normally to be out of control, especially the Cossacks.
4. REF: TABLE 4, INTANGIBLE FACTORS. Leadership was mentioned in 3 above, as were training and experience. The Japanese, except at Port Arthur, exhibited consistently higher morale. Japanese intelligence was superior as was their technology, particularly of artillery (heavy and quick firing) and machine guns, while rifles were comparable, but the Japanese infantrymen went into battle with thirty to sixty more rounds (150-180 total) than his Russian counterpart.
5. REF: TABLE 6, FACTORS AFFECTING OUTCOME. Force quality should favor the Japanese because they were better trained and equipped, had better artillery, and possessed more machine guns. Reserves favored the Japanese also because the Russians had no notion of Japanese mobilization plans. The Russians consistently underestimated the total force that the Japanese

could hurl against them. Mobility was restricted as both sides were tied to the railroad and no actions took place far from a railhead. However, if mobility means strategic mobility, the Japanese again had an advantage because they were able to get their forces into the field for operations sooner than the Russians. Weather was very important, as noted in 2 above. The rugged terrain should have favored the defender at all times, but did not. Leadership at the operational levels favored the Japanese, but by the time of the Mukden battle, the Japanese faced a grave shortage of company grade officers. Moreover, HERO omits General Nogi's campaign at Port Arthur which throws a different light on Japanese leadership. Surprise has been covered in 2 above. If maneuver means "to place the enemy in a position of disadvantage through the dynamic application of combat power" then the Japanese had the advantage. Logistics was not the Russians' strong suit. The gravest logistic problem for the Japanese was the shell shortage during the Port Arthur operation. Logistics had an important bearing on the campaign because the Japanese were exhausted after Mukden. Russian fortifications, with the exception of Port Arthur, were negated by the heavier Japanese artillery. Depth was not significant, but frontage was. For example, from Liaoyang frontages (per 10,000 men) of 2,700 meters for the Japanese and 1,800 for the Russians, to Mukden frontages of 4,000 and 3,000, respectively, may explain why depth was less important and illustrate changing tactics that influenced the outcome of battle.

6. REF: TABLE 7, COMBAT FORMS AND RESOLUTION OF COMBAT. A Japanese flanking of the Russian left was decisive at the Yalu. Similarly, the 4th Infantry Division flanking of the Russian right decided Telissu. Liaoyang was decided in the same manner. Mukden was to have been a Sedan-type encirclement, but General Nogi's Third Army was late in arriving to close the trap. This throws doubt on equality of planning and Japanese advantage in leadership in 3 above.

SOURCES: D. and P. Warner's The Tide at Sunrise should have been consulted. No observer reports are listed. These would provide the type of information needed for this type of analysis.

I consulted: Nihon no Senso. Zukai to daata (The Wars of Japan: Maps and Data) and Nichiro senso gunjishiteki kenkyn (Research of military aspects of the Russo-Japanese War).

HERO: Since comments on this battle were not specifically requested by CAA, HERO did not choose to comment other than as noted on Essen Hook, page B-V-3.

## APPENDIX B - ANNEX XV

GENERAL COMMENTS - MANCHURIAN BATTLES AND  
JITRA LINE OPERATION IN MALAYA

HERO's "Analysis of Factors that have Influenced Outcomes of Battles and Wars: A Data Base of Battles and Engagements" is deficient for the following reasons in its treatment of the Manchurian Battles (Nomonhan) and the Jitra Line operation in Malaya.

**Nomonhan:** The Japanese forces engaged in May 1939 were the reconnaissance unit of the 23rd Infantry Division, perhaps 250 men. Others were border guards or Manchukuoan auxiliaries. The presence of Soviet regular troops, artillery, and tanks in the area was a surprise to the Japanese.

There was no Japanese armor in immediate proximity to the battlefield in late August as it had been withdrawn in early July. Soviet technology was superior, especially in the quality and quantity of armor. Soviet artillery was also better because of better training ranges and availability of shells.

At Nomonhan, terrain was the key factor because the Soviet occupied the high ground west of the river. They had direct observation and direct fire against Japanese on the east bank. This terrain dictated Japanese tactics and is why the Japanese crossed the river and tried to flank the Soviet artillery in early July. As the Japanese could not observe the Soviet buildup except by air, the terrain was again important in achieving surprise for the Soviets.

**Malaya:** The 11th and 41st Infantry regiments of the 5th Infantry Division participated in the attack. They had 100 trucks, 40 light armored cars, 12 howitzers, 15 quick firing guns, and 10 light machine guns. These figures are at variance with HERO totals. Casualty figures are also at variance with the Japanese listing 110 total casualties. The Indian-British division lost 51 artillery pieces and abandoned 210 armored cars or trucks. None of this is apparent from HERO. Also HERO's narrative states the British forces were cut off in northwest Thailand. In fact, Thailand was neutral, and the Japanese chose not to violate that neutrality so they were not cut off in Thailand. Jitra protected the British air base at Alor Star which HERO does not mention.

**HERO:** Since comments on this battle were not specifically requested by CAA, HERO did not choose to comment other than as noted on Essen Hook, page B-V-3.



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OUTCOMES OF BATTLES AND WARS: A DATA  
BASE OF ENGAGEMENTS AND BATTLES**

**ONE SHEET  
STUDY GIST  
CAA-SR-84-6**

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- (1) Determine a set of descriptive factors which are judged to be useful for characterization of the nature and outcomes of military battles.
- (2) Identify a set of battles (600-plus battles over the past four centuries) for which a usefully large part of the descriptive factors above can be expected to be obtainable from results of earlier historical work.
- (3) Prepare, in effect, a matrix of data in which the matrix columns are the descriptive factors, the matrix rows are the battles, and the column/row intersection cells contain the specific data which pertain to the particular descriptive factor in the particular battle.

THE MAIN THESIS on which the work documented herein rests is that historical data concerning factors present in past combat situations can possibly provide the insights which would enhance the ability to more accurately portray hypothetical future battles in simulations.

THE SCOPE OF THE REPORT includes six volumes, five of which contain battle data, and a main report which discusses Concepts Analysis Agency's assessment of the data collection effort.

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REASONS FOR PERFORMING THE STUDY are mainly as follows: a critical feature of simulations used by CAA in addressing theater-level issues is the portrayal of decisions by their commanders and staffs under a variety of conditions. Insights concerning such conditions may be provided through consideration of the conditions existing in previous warfare. Additionally, there is among leaders within the Army analytical community a growing belief that an understanding of the "numbers" of history, when properly employed, could be helpful in predicting the future.

THE STUDY SPONSOR was the Director, US Army Concepts Analysis Agency, who also established the study process and monitored the study activities.

THE STUDY EFFORT was directed by Ms Zelma M. Harms, Assistant Director for Management Support, and LTC Mike Deems, who was the Contracting Officer's Representative for the HERO contract.

COMMENTS AND QUESTIONS may be directed to US Army Concepts Analysis Agency, ATTN: Assistant Director for Management Support, 8120 Woodmont Avenue, Bethesda, Maryland 20814-2797.



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REASONS FOR PERFORMING THE STUDY are mainly as follows: a critical feature of simulations used by CAA in addressing theater-level issues is the portrayal of decisions by their commanders and staffs under a variety of conditions. Insights concerning such conditions may be provided through consideration of the conditions existing in previous warfare. Additionally, there is among leaders within the Army analytical community a growing belief that an understanding of the "numbers" of history, when properly employed, could be helpful in predicting the future.



THE STUDY SPONSOR was the Director, US Army Concepts Analysis Agency, who also established the objectives and monitored the study activities.

THE STUDY EFFORT was directed by Ms Zelma M. Harms, Assistant Director for Management Support, and LTC Mike Deems, who was the Contracting Officer's Representative for the HERO contract.

COMMENTS AND QUESTIONS may be directed to US Army Concepts Analysis Agency, ATTN: Assistant Director for Management Support, 8120 Woodmont Avenue, Bethesda, Maryland 20814-2797.